The association between sexually transmitted diseases and inflammatory cervical cytology

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Abstract

***Objectives*—to assess the significance of inflammatory changes as a marker of sexually transmitted diseases and their use as a diagnostic aid.**

***Methods*—363 patients attending a department of genito urinary medicine were examined prospectively. All underwent cervical cytology and full STD screening. Cervical cytology was assessed for evidence of the presence or absence of inflammatory changes.**

***Results*—There was no significant association between inflammatory cytology and cervical ectropion or dyskaryosis. Infections with *Chlamydia trachomatis* and *Trichomonas vaginalis* were significantly associated with inflammatory changes but there was no significant association with chlamydia alone, and 91·1% of *T. vaginalis* infections were detected on cytology.**

***Conclusion*—The presence of inflammatory changes on cervical cytology seems a poor indicator of sexually transmitted diseases.**

Introduction

It has been suggested that inflammatory changes in cervical cytology indicate the presence of, and should initiate a search for, sexually transmitted diseases (STDs).[1] The aim of this study was to assess the significance of inflammatory changes as a marker of STDs in a genitourinary medicine clinic and its use as a diagnostic aid.

Methods

All female patients aged 16–45 years attending a STD clinic run by one of us (CD) from the beginning of June 1990 to the end of August 1990 were assessed prospectively. Patients were excluded if they had ever had abnormal cytology or had received antifungal or antibiotic treatment within the previous two weeks. All assessments and tests were performed by CD.

Specimens were collected for the detection of *Gardnerella vaginalis, Candida albicans* and *Trichomonas vaginalis, Neisseria gonorrhoeae, Chlamydia trachomatis* and *Herpes simplex* virus if indicated, as described elsewhere.[2 3] Serum was collected for serological tests for syphilis. Genital warts were diagnosed by clinical appearances. Presence or absence of ectropion was noted. All patients underwent cervical cytology which was assessed by MN for the presence of inflammatory, koilocytotic or dyskaryotic changes and also for the presence of TV and candida.

The cytological criteria for inflammatory changes in cervical smear were based mainly on the nuclear abnormalities,[4] that is, some variation in nuclear size: binucleation; nuclear enlargement not amounting to dyskaryosis; nuclear pyknosis and karyorrhexis in superficial and parabasal cells, together with smooth nuclear halo. An increase in polymorphonuclear leucocytes was also designated as inflammatory.

Statistical significance was calculated using the chi square test.

Results

Of the 363 women who were recruited, 101 (27·8%) had a smear with inflammatory changes. These were compared with those without such changes.

There was no statistically significant difference between the two groups in age, parity, past history of STDs or contraceptive use (table 1).

Forty-nine (48·5%) patients with inflammatory smears had at least one concurrent STD compared with 135 (51·5%) with non-inflammatory smears.

The prevalence of STDs, ectropion and dyskaryosis in both groups is shown in tables 2

Table 1 Age, parity, past history of STDs and contraception

	Inflammatory	*Non-inflammatory*
Mean age	26·06	27·03
Range	16—44	16–45
Parity (nulliparous)	44 (43·6%)	144 (54·9%)
Past history of STD	38 (37·6%)	121 (46·1%)
Oral Contraception	48 (47·5%)	107 (40·8%)
IUCD	8 (7·9%)	9 (3·4%)

Table 2 Prevalence of STDs

	Inflammatory N = 101 (%)	*Non-inflammatory N = 262 (%)*
T vaginalis	18 (17·8)*	16 (6·1)
Chlamydia	18 (17·8)*	16 (6·1)
N. gonorrhoeae	8 (7·9)	13 (5)
Candida	36 (35·6)	91 (34·7)
Gardnerella vaginalis	33 (32·7)	65 (24·8)
NGU Contact	13 (12·9)	21 (8)
Herpes simplex virus	4 (3·9)	9 (3·4)
Warts	8 (7·9)	28 (10·7)

*p < 0·001

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Table 3 Prevalence of ectropion and dyskaryosis

	Inflammatory N = 101(%)	*Non-inflammatory N = 262(%)*
Ectropion	43 (42·6)	70 (26·7)
WVI; Mild dyskaryosis	15 (14·8)	67 (25·5)*
Moderate, severe dyskaryosis	13 (4·9)	5 (4·9)

*$p < 0.005$
WVI = Wart virus infection

and 3. Although the prevalence of cervical ectropion was higher in patients with inflammatory smears, this difference was not statistically significant—43 (42·6%) compared with 70 (26·7%) patients in the non-inflammatory group.

The prevalence of wart virus changes and mild dyskaryosis was higher in those with non-inflammatory cytology, 67 (25·5%) compared with 15 (14·8%) in those with inflammatory cytology ($p < 0.05$).

Discussion

It has been assumed that inflammatory cervical cytology may indicate the presence of STDs, especially chlamydia, and that the presence of inflammatory changes in cytology should prompt screening for STDs. However, Smith *et al*[5] failed to find a significant difference in the prevalence of chlamydial infection between women with abnormal smears attending a colposcopy clinic and women in general practice with normal smears. Our results support these findings.

We found no association between inflammatory smears and dyskaryosis, cervical ectropion, the use of oral contraception or IUCD, or a past history of STD.

There was a high prevalence of STDs in both groups, as might be expected in an STD clinic. Chlamydia and *T vaginalis* were found more often in patients with inflammatory changes and the association with dual infection was highly significant ($p < 0.001$).

Screening all patients with inflammatory cytology would have detected 18% of cases of chlamydia (18/101) compared with detecting 9·4% if all patients are screened (34/363). Screening all patients with *T vaginalis* on cytology would have detected 26% of cases of chlamydia (8/31).

We thus conclude that, in a genitourinary clinic population, the presence of inflammatory changes on cervical cytology correlates with the presence of chlamydia and *T vaginalis* infection; but as a tool for case finding it is a poor indicator of STDs. The study needs to be repeated with larger numbers and in a general practice. We would expect in this situation the overall prevalence of STDs to be lower and the yield be commensurately reduced. It would be interesting to compare *T vaginalis* on cytology with inflammatory changes as tools for detecting other STDs.

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4 Evans DMD, Hudson EA, Brown CL, *et al*. Terminology in gynaecological cytopathology: report of the working party of the British Society for Clinical Cytology. *J Clin Pathol* 1986;**39**:933–44.
5 Smith JR, Murdoch J, Carrington D, *et al*. Prevalence of Chlamydia trachomatis infection in women having cervical smear tests. *BMJ* 1991;**302**:82–4.